

## ABSTRACT OF THE DISCLOSURE

### METHOD FOR INCREASING THE SIGNAL-TO-NOISE RATIO IN IR-BASED EYE GAZE TRACKERS

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The accuracy of eye gaze trackers is used in the presence of ambient light, such as sunlight, is improved. The intensity of sunlight and its constituent wavelengths of light, such as infrared radiation, do not vary rapidly. During the inter-frame interval of video cameras (typically 1/30th of a second), the level of ambient infrared radiation can be considered nearly constant. In a first embodiment, the modulation of the IR illuminator is synchronized with each frame of the camera such that the illuminator alternates between on and off with each subsequent frame. If one considers a sequence of such frames, then the image captured in the first frame contains both the illuminator signal and the ambient radiation information. The image captured in the second frame contains only the ambient radiation information. By subtracting the second frame from the first frame, a new image is formed that contains only the information from the illuminator signal. The resulting image can then be used by the conventional eye tracker system to compute the direction of eye gaze even in the presence of an ambient IR source.